

# Surveillance and Broadcast Services

## Briefing to ICNS Conference

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Date: May 1, 2006



# Agenda

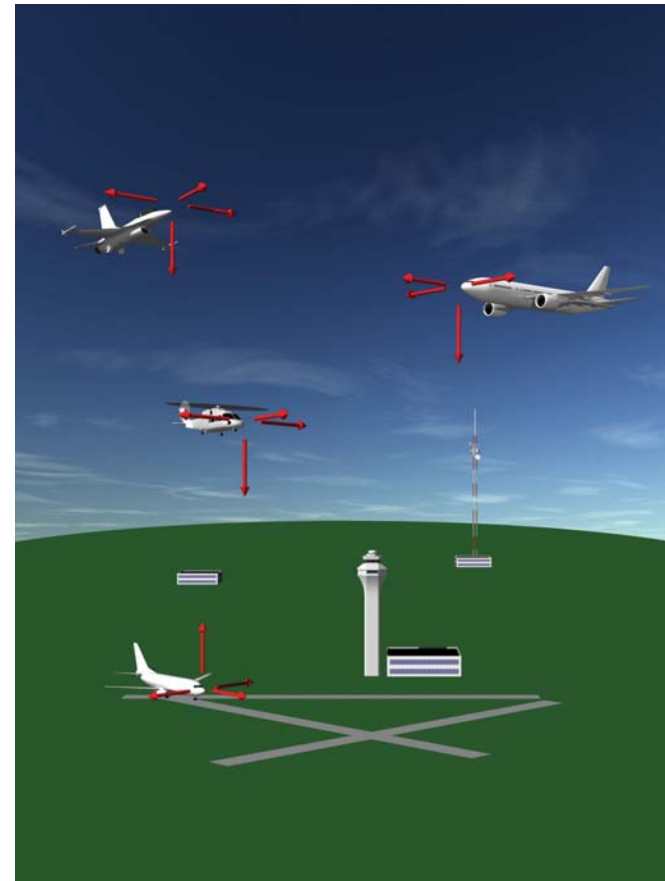
- **What is ADS-B / TIS-B / FIS-B?**
- **Program Background**
- **Objective**
- **Approach**
- **Schedule**
  - JRC-2B
  - Execution
- **Acquisition Strategy**
- **Rulemaking**
- **Summary**

# Automatic Dependant Surveillance - Broadcast (ADS-B) Description

- **The ADS-B system is a crucial component of the Next Generation Air Transportation Systems (NGATS). It provides surveillance and situational awareness simultaneously to pilots and air traffic control facilities. ADS-B is designed to improve the safety, capacity, and efficiency of the National Airspace System (NAS) while providing a flexible and expandable platform to accommodate future air traffic growth.**

# Automatic Dependant Surveillance - Broadcast (ADS-B) Description

- **Automatic**
  - Periodically transmits information with no pilot or operator input required
- **Dependent**
  - Position and velocity vector are derived from the Global Positioning System (GPS) or a Flight Management System (FMS)
- **Surveillance -**
  - A method of determining position of aircraft, vehicles, or other asset
- **Broadcast**
  - Transmitted information available to anyone with the appropriate receiving equipment



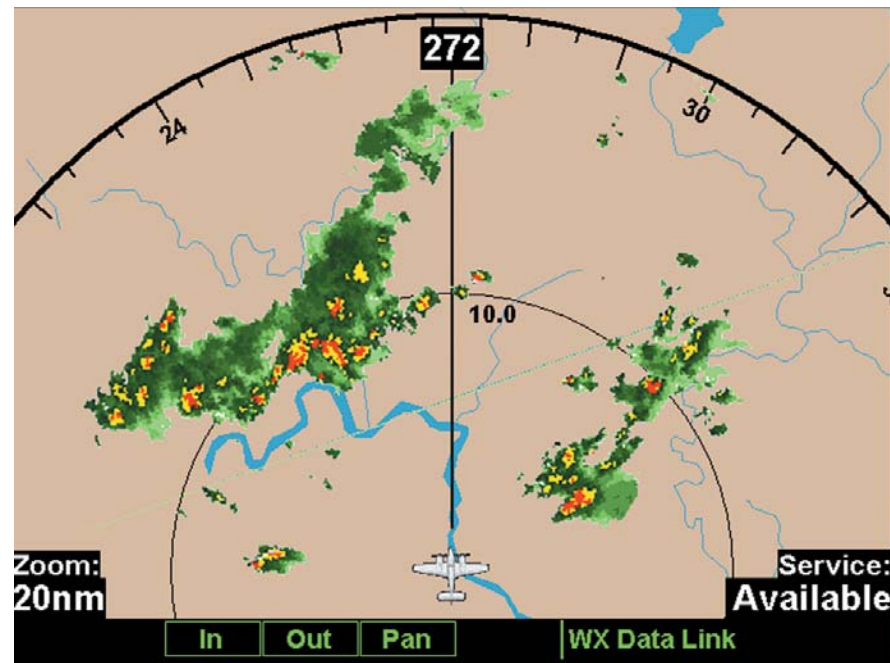
# Traffic Information Service - Broadcast (TIS-B) Description

- Traffic Information Service – Broadcast (TIS-B) is a service which provides ADS-B equipped aircraft with position reports from secondary surveillance radar on non-ADS-B equipped aircraft.

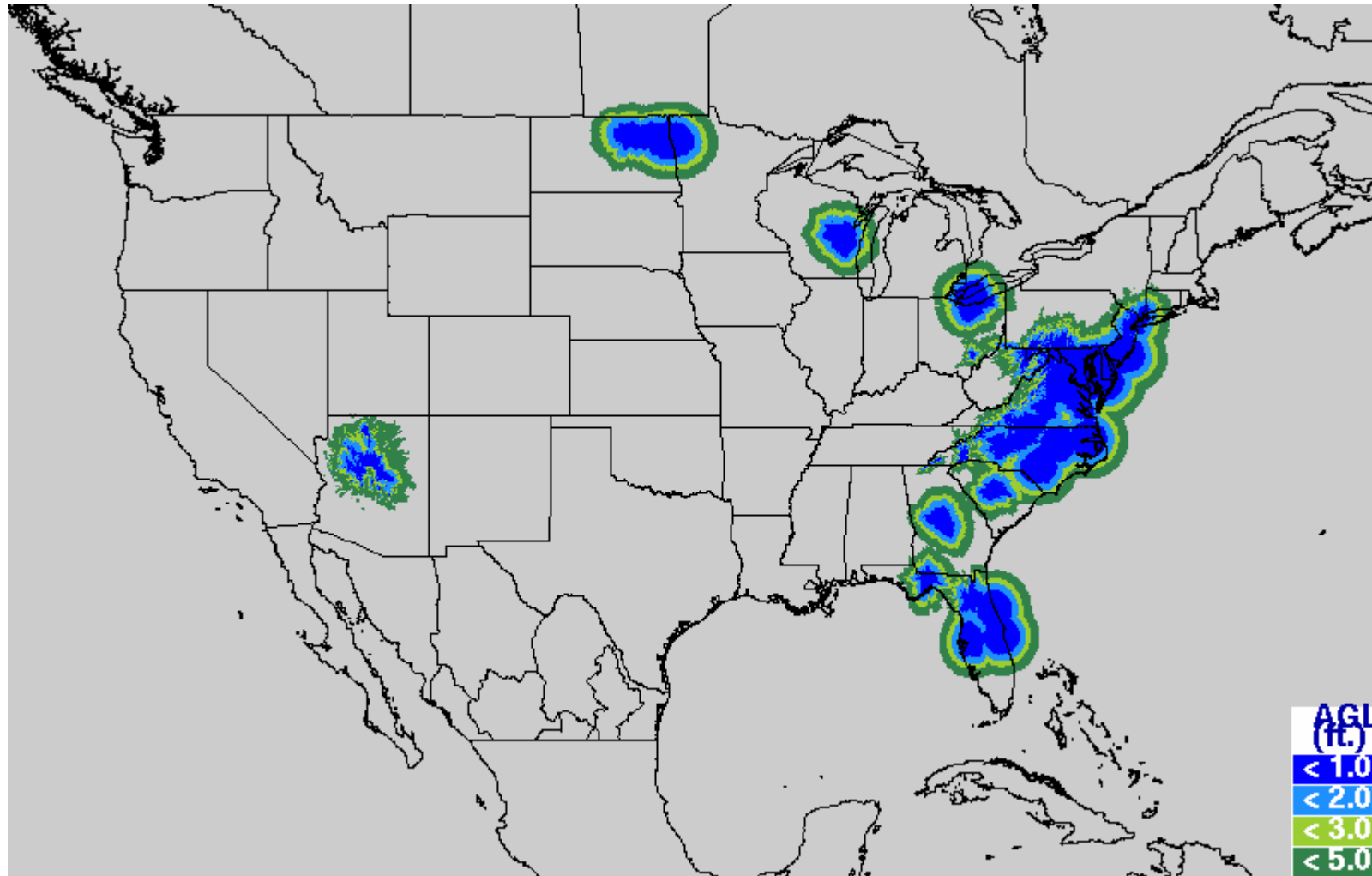


# Flight Information Service - Broadcast (FIS-B) Description

- **Flight Information Service – Broadcast (FIS-B)** transmits graphical National Weather Service products, temporary flight restrictions (TFRs), and special use airspace.



# TIS-B / FIS-B Service



Coverage for 40 existing sites

ADS-B



Federal Aviation  
Administration

# Program Background

- On September 9, 2005 the JRC approved the initial investment decision for the Future Surveillance and directed the team to seek a final investment decision from the JRC by July 2006. The JRC also approved establishing an ATO-level Surveillance and Broadcast Services office that would be responsible for coordinating and obtaining funding to support the agency-wide resources required to develop, implement, and manage the ADS-B future surveillance services and systems.



# Objective

- **Develop a multi-segment, life cycle managed, performance based ADS-B strategy that aligns with the Next Generation Air Transportation System (NGATS) vision and generates value for the National Airspace System (NAS)**
  - Integrate Concept of Operations for Portfolio of ADS-B Applications
  - Develop Application Life Cycle Management Approach
    - Portfolio Management for Applications
    - Requirements Management Across the Applications
    - Performance Criteria Management
  - Establish Infrastructure
  - Continuously Monitor Value and Adjust Investments

# Approach: Initial ADS-B Applications

Application:	Segment:
Surveillance Broadcast Services (En Route, Terminal, Surface)	Segment 1 & 2
Traffic / Flight Information Broadcast Services	Segment 1 & 2
Enhanced Visual Acquisition	Segment 1 & 2
Enhanced Visual Approaches	Segment 1 & 2
Final Approach and Runway Occupancy Awareness	Segment 1, 2 & 3
Airport Surface Situational Awareness	Segment 1, 2 & 3
Conflict Detection	Segment 1, 2 & 3

**Additional Aircraft to Aircraft Requirements Definition – Segment 1, 2 & 3**

# Approach: ADS-B Program Segments

Segment 1	Segment 2	Segment 3	Segment 4
<ul style="list-style-type: none"> <li>• Targeted ADS-B Infrastructure Deployment</li> <li>• ADS-B “Out” Notice of Proposed Rulemaking Issued</li> <li>• Begin Avionics Equipage</li> </ul>	<ul style="list-style-type: none"> <li>• Complete ADS-B NAS Wide Infrastructure Deployment</li> <li>• ADS-B “Out” Final Rule Published</li> <li>• Continue Avionics Equipage</li> </ul>	<ul style="list-style-type: none"> <li>• Complete Avionics Equipage</li> <li>• Targeted Removal of Legacy Surveillance</li> </ul>	<ul style="list-style-type: none"> <li>• Complete Removal of Targeted Legacy Surveillance</li> </ul>
<ul style="list-style-type: none"> <li>• Expand TIS-B / FIS-B Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Complete TIS-B / FIS-B Deployment</li> </ul>		<ul style="list-style-type: none"> <li>• TIS-B Removal</li> </ul>
<ul style="list-style-type: none"> <li>• Begin Initial Aircraft to Aircraft Application Deployment</li> <li>• Additional Aircraft to Aircraft Requirements Definition</li> </ul>	<ul style="list-style-type: none"> <li>• Continue Initial Aircraft to Aircraft Application Deployment</li> <li>• Additional Aircraft to Aircraft Requirements Definition</li> <li>• Additional Aircraft to Aircraft Application Deployment</li> </ul>	<ul style="list-style-type: none"> <li>• Complete Initial Aircraft to Aircraft Application Deployment</li> <li>• Additional Aircraft to Aircraft Requirements Definition</li> <li>• Additional Aircraft to Aircraft Application Deployment</li> </ul>	<ul style="list-style-type: none"> <li>• Complete Additional Aircraft to Aircraft Application Deployment</li> </ul>

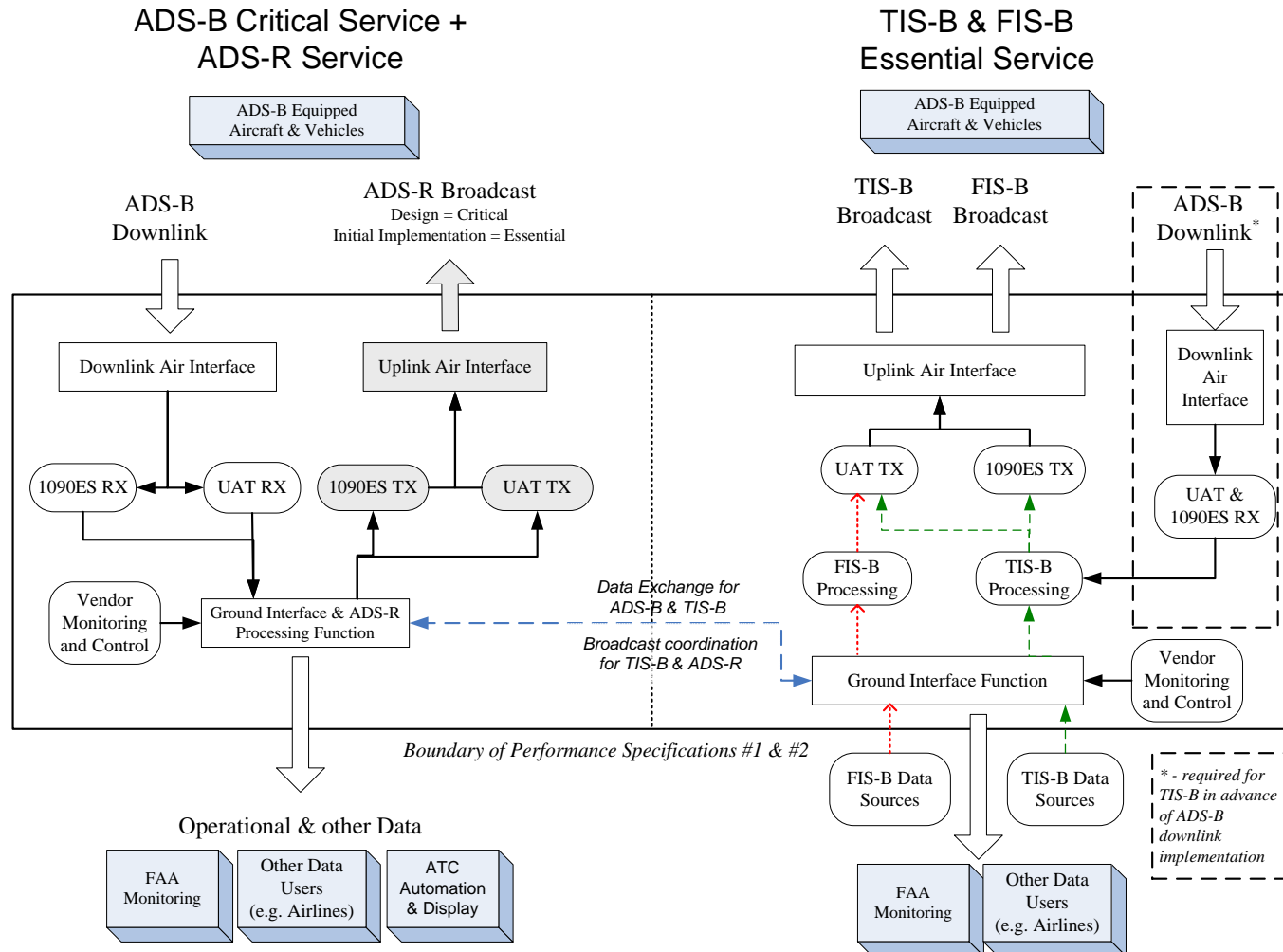
# Program Status JRC-2B

Deliverable	Completion Date	Completed
Formulate Plan / Scope	2/24/06	X
ATMAC Brief	2/24/06	X
Draft PMP	3/24/06	X
Updated Schedule w/ Risk - Segment 1	4/7/06	X
Final Schedule Evaluation Activities (ATO-F & Cost Team)	4/28/06	
Risk Management Plan	4/28/06	
CONOPS Complete	4/28/06	
Implementation Strategy & Planning (OMB 300 Attachment 3)	4/28/06	
Schedule Complete	5/4/06	
Lifecycle Cost Analysis	5/9/06	
Benefits Analysis	5/9/06	
JRC Readiness Briefing	5/15/06	
CIT Review (F&E and OPS Budget Impact) (ATO-F)	5/22/06	
Final Program Requirements (fPR) (OMB 300 attachment-1)	5/23/06	
Updated OMB 300	5/23/06	
ATO-F Final Review & Approval (PMR-Juba)	5/23/06	
JRC Secretariat Prep Cycle - Initiate ACM Checklist / JRC Agenda	5/24/06	
Business Case Analysis	5/30/06	
Executive Council Briefing	5/31/06	
JRC 2b	6/7/06	

# Proposed Schedule: Segments 1, 2, 3, 4

- **Segment 1 (2007 – 2010):**
  - Begin Avionics Equipage: FY 2007
  - Expand TIS-B / FIS-B Infrastructure: FY 2007 – FY 2010
  - Additional Aircraft to Aircraft Requirements Definition: FY 2007 – FY 2010
  - ADS-B “Out” Notice of Proposed Rulemaking (NPRM) Issued: FY 2008
  - Begin Initial Aircraft to Aircraft Application Deployment: FY 2008
  - Targeted ADS-B Infrastructure Deployment: FY 2010
- **Segment 2 (2010 – 2014):**
  - ADS-B “Out” Final Rule Published: FY 2010
  - Continue Initial Aircraft to Aircraft Application Deployment: FY 2010 – FY 2014
  - Additional Aircraft to Aircraft Application Deployment: FY 2010 – FY 2014
  - Additional Aircraft to Aircraft Requirements Definition: FY 2010 – FY 2014
  - Complete TIS-B / FIS-B Deployment: FY 2012
  - Complete ADS-B NAS Wide Infrastructure Deployment: FY 2013
  - Complete 40% Avionics: FY 2014
- **Segment 3 (2015 – 2020):**
  - Additional Aircraft to Aircraft Requirements Definition: FY 2015 – FY 2020
  - Additional Aircraft to Aircraft Application Deployment: FY 2015 – FY 2020
  - Targeted Removal of Legacy Surveillance: FY 2018 – FY 2020
  - Complete 100% Avionics: FY 2020
  - Complete Initial Aircraft to Aircraft Application Deployment: FY 2020
- **Segment 4 (2021 – 2025):**
  - Complete Removal of Targeted Legacy Surveillance: FY 2023
  - TIS-B Removal: FY 2025
  - Complete Additional Aircraft to Aircraft Application Deployment: FY 2025

# Acquisition Strategy



# Acquisition Strategy (Continued)

- **Addresses acquisition approach and total cost of ownership:**
  - Maximize competition, minimize protests due to patent issues, competition with XM radio style service providers, level playing field for all respondents to RFO, reduce total cost of ownership:
    - Performance specification maximizes acquisition alternatives
      - FAA awards, owns, and maintains
      - Service Award
      - Performance Based Acquisition can be exploited for the two approaches

# Acquisition Strategy (Continued)

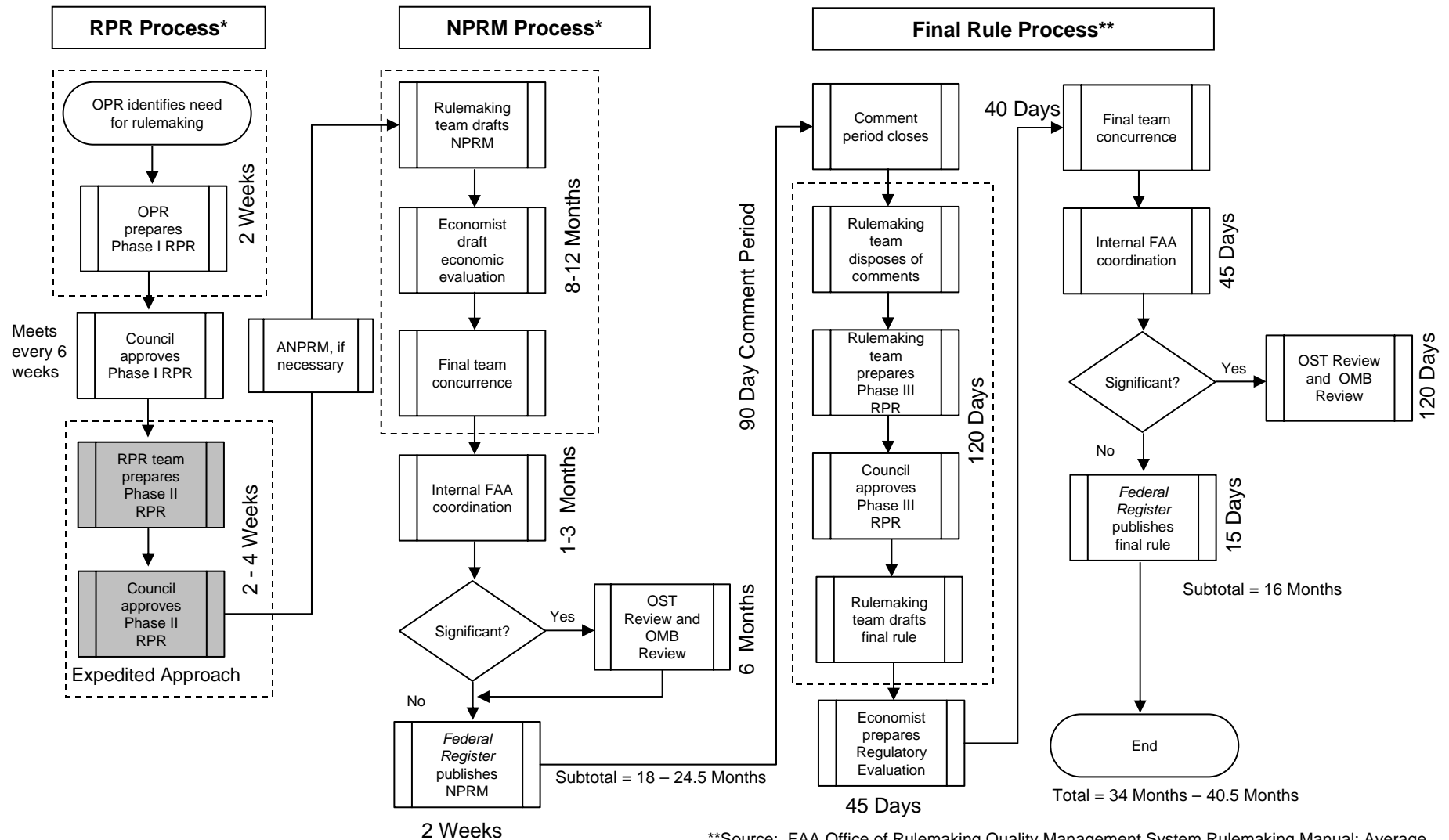
- **The goal of the acquisition is to award a national ADS-B contract and expand the ADS-B / TIS-B / FIS-B infrastructure in FY2007**
- **TIS-B / FIS-B expansion (by the end of FY2007)**
  - Existing “east coast deployment” will be expanded westward into the Great Lakes Region
  - Phoenix/Prescott, AZ coverage will spread westward to Central and Southern California



# Acquisition Strategy (Continued)

- **Segment 1 ADS-B service locations include the following:**
  - Service Coverage Volume: Southeast Alaska Juneau Area
    - Service Delivery Point: Anchorage Center and Juneau Air Traffic Control Tower
    - Service: Surveillance
  - Service Coverage Volume: Gulf of Mexico Area
    - Service Delivery Point: Houston Center and Helicopter Operator Dispatch Center
    - Service: Communication, Weather, Surveillance
  - Service Coverage Volume: Louisville (KY), Kansas City (MO), Garden City (KS), North Platte (NE) Area
    - Service Delivery Point: Louisville TRACON and UPS Airline Operations Center
    - Service: Surveillance
  - Service Coverage Volume: Philadelphia Area
    - Service Delivery Point: Philadelphia TRACON and UPS Airline Operation Center
    - Service: Surveillance
- Additional potential locations include:
  - Ontario, CA
  - Memphis, TN
  - Indianapolis, IN
  - Oakland, CA
  - Newark, NJ

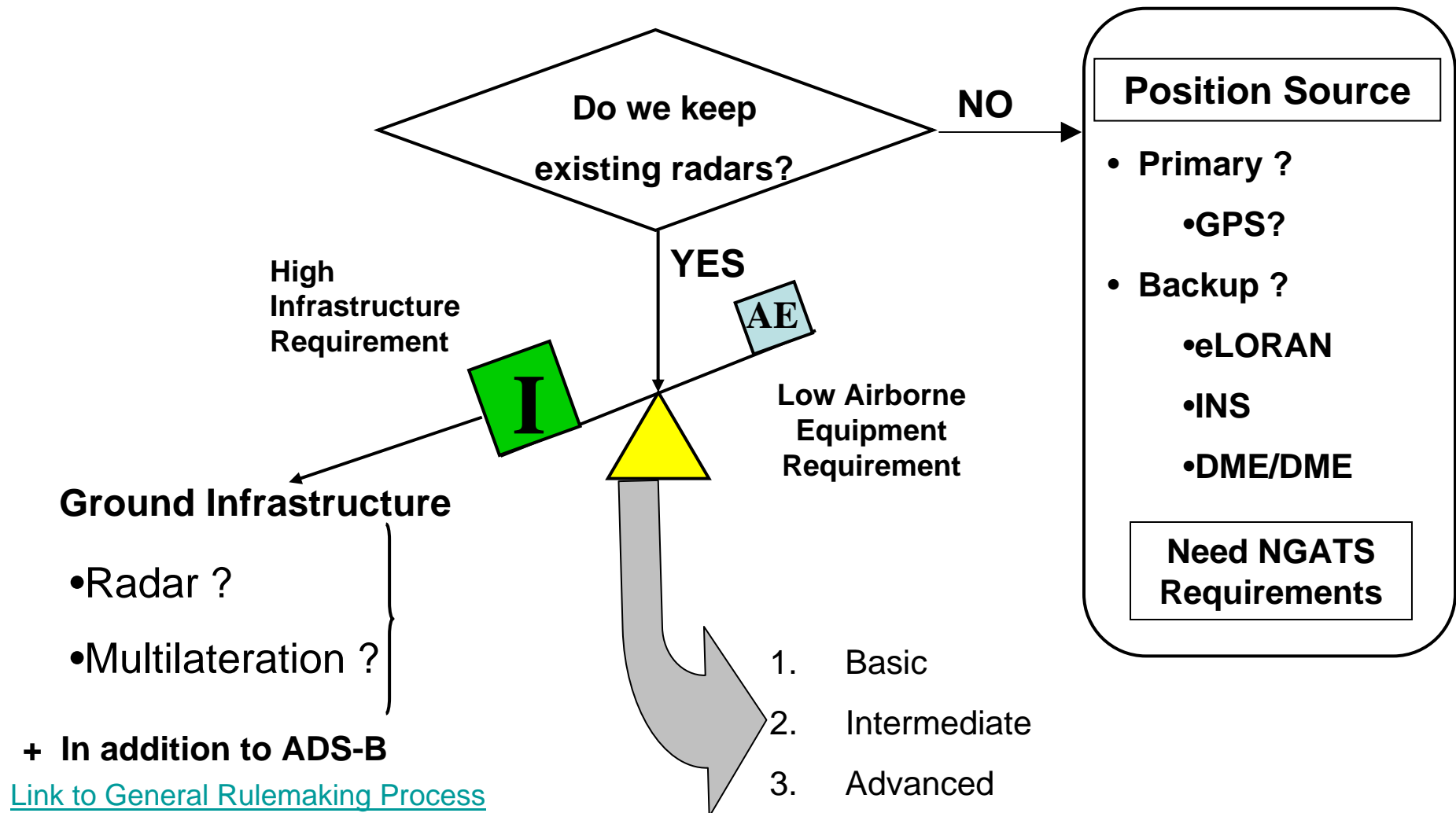
# General Rulemaking Process



\*Estimated durations and diagram provided by AVS/Mitre

\*\*Source: FAA Office of Rulemaking Quality Management System Rulemaking Manual; Average timeframes provided, actual timeframes depend on size and complexity of project

# Critical Decision



# Summary

- **Program has transitioned from Research and Development (R & D) to Implementation**
- **Dual track service acquisition and rulemaking strategy being examined**
- **Technical issues under investigation**
  - Surveillance / Navigation Backup
  - Effects of 1090 Mhz uplink saturation in high density airspace
- **Collaborative FAA / industry effort will achieve a balanced customer – owner – employee approach**